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# PRIMARY RETROPERITONEAL TERATOMA IN AN ADULT: ULTRASONOGRAPHIC, COMPUTER TOMOGRAPHIC AND MAGNETIC RESONANCE IMAGING DEMONSTRATIONS

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A 25-year-old male patient with a primary retroperitoneal teratoma is described. The chief complaint was right hypochondralgia during exercise for seven days. Various diagnostic imagings disclosed an expansive, heterogenous and fat-rich mass associated with multiple cystic lesions in the right suprarenal fossa. Saggital, transaxial and coronal magnetic resonance imaging scan visualized the extent and character of the tumor very clearly. Histological examination of the tumor removed through a thoracoabdominal approach showed cystic teratoma with out malignant transformations.

**Key words:** Retroperitoneum, Teratoma, Adult, Magnetic Resonance Images

## INTRODUCTION

In the recent advance and spread of the diagnostic modalities including ultrasonography (USG), computerized tomography (CT) and magnetic resonance imaging (MRI) the diagnosis and differentiation of the space-occupying lesions deep in the body have been becoming more easier<sup>1,2)</sup>. Especially concerning the extent, character and relationship between the tumor and adjacent structures, the diagnostic procedures of USG, CT and MRI can pick up some useful information noninvasively for retroperitoneal tumors.

Primary retroperitoneal teratoma constitutes approximately 10% of all primary retroperitoneal tumors and is rare in adults because of its congenital nature<sup>3)</sup>. The occurrence rate of retroperitoneal teratoma

was 30% for the third decade<sup>4)</sup>. Fortunately, the diagnosis and differentiation of retroperitoneal teratoma have been established through the evaluation of USG, CT and MRI according to the several new case reports<sup>5,6)</sup>. We have encountered a 25-year-old male patient with benign retroperitoneal teratoma arising from the suprarenal fossa, and some valuable pictures of USG, CT and MRI are presented in this report.

## CASE REPORT

Case A 25-year-old man in whom right hypochondralgia during exercise had been occurring for one week, visited our Internal Medicine Clinic on June 24th, 1987. Past and family history were noncontributory. Physical examination revealed no particular findings except slightly decrea-

sed respiratory sound of the right lung. Although fluoroscopy gave negative findings, abdominal USG (Sonolayer-V, SSA-90A, Toshiba, Tokyo) disclosed a large hyperechoic mass containing multiple cystic lesions in the suprarenal region (Fig. 1). Intravenous pyelography showed the right kidney displaced distinctly downwards. CT (TCT-60A, Toshiba, Tokyo) scanning revealed a large, well-demarcated and heterogeneous mass pushing up the liver and expanding to the median line, in which fat and fluid-containing cysts were thought to be main components and tiny calcification was seen (Fig. 2). The patient was admitted on July 1, and laboratory test results including endocrinological and

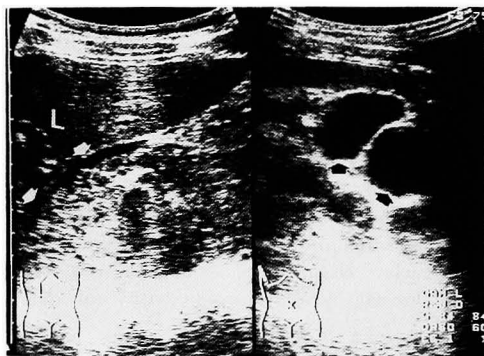


Fig. 1. Saggital (left) and right intercostal ultrasonograph (right) of the upper abdomen. A large hyperechoic mass (white arrow) containing multiple cysts (black arrow) occupies the right suprarenal fossa beneath the liver (L).

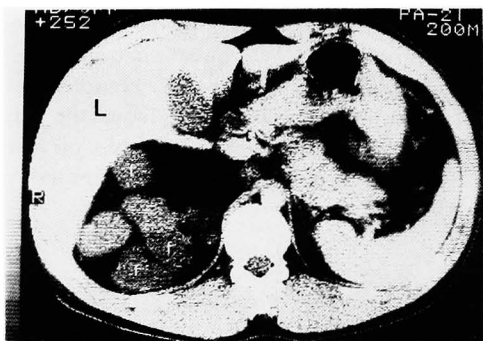


Fig. 2. Enhanced CT scan shows a well-demarcated and expansive tumor which compresses the liver (L), including a large amount of adipose tissues with multiple fluid-containing cysts (f) in its center.

embryonic antigen analyses were normal. No definite feeding artery to the tumor was identified by angiography. The isotope accumulated in a part of tumor lesion on  $^{67}\text{Ga}$  scan.

Imaging with a 1.5-Tesla superconducting MRI unit (Signa system, General Electric, Milwaukee) was performed at Kanazawa University Hospital. Images were produced via a selective irradiation technique using 2-dimensional Fourier transformation with

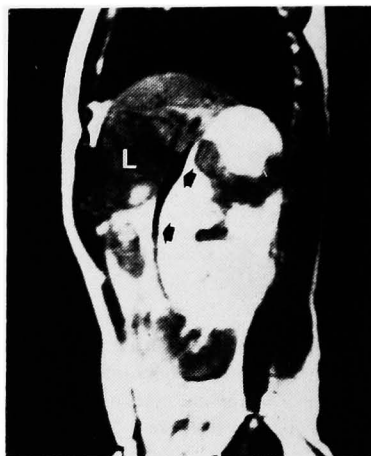


Fig. 3 A. Saggital MR image (TE 500 msec and TE 25 msec) shows a heterogeneous tissues. Inferior vena cava (black arrow) is markedly displaced.



Fig. 3 B. Coronal MR image (TR 500 msec and TE 25 msec). A large retroperitoneal tumor pushes away the liver (L) and the right kidney (black arrow) downwards. The upper border of the right kidney is clearly demarcated and separated from the tumor.

a 256×128-pixel matrix. The spin-echo imaging sequences were accomplished with a repetition time of 500 msec, echo-delay of 25 msec, and number of excitations of two. Sagittal, transaxial and coronal scans were carried out with a section thickness of 10 mm. Sagittal, transaxial and coronal scans showed the shape and extent of the mass stereoscopically (Fig. 3A and 3B). Signal intensity of circumscribing material was high, similar to subcutaneous adipose tissue. Preoperative diagnosis was teratoma.

Tumor removal was done through a thoracoabdominal approach at the ninth intercostal space on July 15. Adherence with adjacent structures was mild. The right adrenal gland could be identified on examination of the suprarenal fossa. The tumor weighed 1,000 g and was 18×16×13 cm. in size. Fat tissue was the main component on the cut surface, in which the cystic structures had whitely turbid fluid and fibrotic tissue as a hard induration. No bones or teeth were observed clearly. Microscopically, the tumor consisted of many types of mature tissue. Stromal elements were composed of mainly mature fat tissue and some foci of cartilage and striated muscle could be seen. Mucin-producing column cells or ciliated column cells lined the cyst walls. Respiratory mucosa with glands and thyroid tissue were also seen, but skin was not. Histological diagnosis of benign cystic teratoma was made. The patient was discharged on August 4.

### DISCUSSION

Concerning the origin of the retroperitoneal teratoma, the migration and growth theory of embryonic tissues from the primitive streak was broadly accepted because the retroperitoneal tumor frequently arises in an immediately preaxial or paramedian location<sup>7)</sup>. No significant laterality of primary retroperitoneal teratoma was observed. Primary retroperitoneal teratoma has not frequently manifested clinical signs, such as abdominal pain, nausea, anorexia and so on, until the tumor becomes large enough to influence the structure and function of the adjacent organs. The

differentiation of teratoma from other retroperitoneal tumors has been difficult prior to the advance and wide spread use of USG, CT and MRI. Even the biochemical character of retroperitoneal tumor is now noninvasively revealed using these modern diagnostic equipments. In addition to intratumoral calcification including dental structures or bone formation in the radioluscent and hypovascular tumor on conventional radiographic methods, adipose tissues and muscle elements can be detected easily by USG, CT and MRI. However, malignant transformation which constitutes 25.8% of retroperitoneal teratomas has not significantly been detected even now. Needle biopsy has not always been liable because of heterogeneity of teratoma. Final diagnosis of retroperitoneal teratoma should be made through tumor resection. Thoracoabdominal approach provided a good access for the removal of large retroperitoneal teratoma in the suprarenal fossa. Engel and associates<sup>4)</sup> reported a case retroperitoneal teratoma without the colateral adrenal gland. There is no satisfactory explanation of absence of the colateral adrenal gland. Prognosis is good in benign retroperitoneal teratoma, while poor in malignant teratoma.

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## 和文抄録

### 成人に見られた後腹膜腔原発の良性奇形腫の1例

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原発性後腹膜奇形腫を有した25歳男子の1症例を報告する。主訴は1週間前から続く体動時の右季肋下部痛である。種々の画像診断法により右腎上窩に周囲を圧排する、不均一だが脂肪組織に富んだ腫瘍が認められた。核磁気共鳴によるCT スキャンによる矢状、

水平および冠状断層像により、腫瘍の性格および広がりが明瞭に示された。経胸腹的アプローチにより摘除された腫瘍の組織所見は cystic teratoma で、悪性所見は認められなかった。

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